CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

ESTABLISHED APRIL 15, 1870

BERTRAM P. BROWN, M.D., Director

Weekly Bulletin

STATE BOARD OF PUBLIC HEALTH

DR. A. ELMER BELT, Los Angeles, President — DR. F. M. POTTENGER, SR., Los Angeles, Vice President

DR. V. A. ROSSITER, Santa Ana — DR. NORMAN F. SPRAGUE, Los Angeles — DR. E. M. MacKAY, La Jolla

DR. CHARLES E. SMITH, San Francisco — DR. AMOS CHRISTIE, San Francisco — DR. BERTRAM P. BROWN, Sacramento, Executive Officer

SAN FRANCISCO: 603 Phelan Building, 760 Market Street, UNderhill 8700

SACRAMENTO: State Office Building, 10th and L Streets, 2—4711

LOS ANGELES: State Office Building, 217 West First Street, MAdison 1271

Entered as second-class matter February 21, 1922, at the post office at Sacramento, California, under the Act of August 24, 1912. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917.

Vol. XX, No. 23 — June 28, 1941 — GUY P. JONES, EDITOR

Significance of Obstetrical Deaths in California for 1940

(Continued from last issue)

Eight infection deaths were preceded by pulmonary infarction and two by cerebral emboli. There were two wound infections severe enough to result in disruption. Puerperal metritis with extension and clinical septicemia caused 22 deaths, while two were charged pyelonephritis infections. Ileus and peritonitis were the manifestations of another 12 infections, while salpingo-oophoritis four times, appendicitis and ovarian torsion were responsible for the additional infection fatalities. Ileus occurred twice as primary cause of death in afebrile patients.

The management of this group of entities requires bacterial investigation and rather more clinical adeptness with the sulfonamides than is exhibited in the cases reviewed. The pathology of micro-organism infection has been revised by the trend in therapy as noted by the few cases of hepatic abscess and agranulocytosis.

Emboli

Fatal emboli make up 8 per cent of the maternal deaths. Most of these patients had a pulmonary embolism as the terminal event, having had *no* elevation of temperature to febrile levels during the puerperium. One patient long under treatment for varicose veins was classified as phlebothrombosis from which she succumbed in clinical embolism death. With the exception of such phlebothrombosis, varicose veins and atrial thromboses these cases are usually associated with mild infections. Bacterial stains may reveal micro-organisms in the vessel wall and thrombus. In this connection it appears that in the absence of recognizable disease or abnormal pregnancy, emboli are the most numerous causes of death in obstetrics. Their incidence increases in operative over spontaneous delivery. The incidence in most clinics is about one in a thousand. Accordingly we might expect twice as many as were reported in California last year and it may be assumed that some were either not recognized or were erroneously diagnosticated.

Prevention of the 25 cases of known embolism deaths is now only beginning. Essentially assiduous prevention and treatment of infection is the keystone but measures to increase the rate of venous blood flow such as bed exercises, measures to increase metabolism and cardiac output, and possibly anticoagulants are suggested for attack. Since nearly three-quarters die within thirty minutes prompt, readily available treatment should be prearranged in all hospitals caring for obstetrical patients.

Intrapartum Accidents

Of the accidents of labor, chiefly hemorrhagic, there were a large number of ruptured uteri and retained placentae. Post-operative shock, placenta accreta and inverted uteri contributed to the number of serious and fatal accidents of parturition. The ruptured uteri comprise nearly 5 per cent in this study of which half were proved at autopsy. The greatest hazard in this regard seems to be in those

that are not recognized for here, time is precious, and the treatment literally life-saving. The fact that eight were found at autopsy rather than on the operating table suggests that this possibility is too often unrecognized. It is probable that there were many more which were ascribed to other categories. Herein lies the predominant educational advantage to the attendant of an autopsy on every obstetrical fatality. Necropsy lessons to the physician are vivid and usually present a few unexpected findings.

The treatment of placenta accreta is hysterectomy but this was not attempted in the cases reviewed. Inverted uterus prevention calls for extraordinary third stage care. When presented with this situation there is no report of attempted manual or abdominal operative restoration in the California fatal cases.

Operative Deliveries

Universal interest in operative delivery and particularly Cesarean section warrants a review of these procedures as associated with the causes of death. In all, there were 127 operative deliveries.

TABLE II

CAUSE OF DEATH IN OPERATIVE DELIVERIES

Associated diseases	10
Infections	44
Toxemia	24
Hemorrhages	40
Instances of sudden death	9
Total	127

Version and extraction was associated with 20 of the obstetrical deaths and forceps (excluding outlet forceps) with 19 instances. Five women died subsequent to breech extraction and three following manual removal of the placenta. One woman failed to survive a craniotomy procedure on her dead child. Four deaths followed manual dilatation of the cervix, and two with insertion of a Vorhees' dilating bag.

When only women who have delivered viable children are considered as previously mentioned, there are 215 deaths. Of these, 59 per cent had operative deliveries. Thirty-four per cent were delivered by Cesarean section. On the other hand, considering the maternal deaths as a whole, Cesarean section was performed in nearly 24 per cent of all the women comprising the entire study, or in 74 instances.

They constituted two Porro hysterectomies, 23 low cervical sections and 46 classical sections. In addition, there were three Cesarean sections which had additional pelvic surgery, two of them with appendectomy.

Thirty-two Cesarean sections were emergency procedures, while 26 were planned and 13 presented insufficient data to determine this point. Impressions from a survey of each of the cases as afforded by the hospital record and the practitioner's memory indicate that a number of operative procedures were done when the patient had antepartum anemia. It is well recognized that a hemoglobin of at least 50 per cent (7 grams), or measures to transfuse the patient on the table, is a prerequisite to safe abdominal surgery in obstetrics.

Reviewing the 74 Cesarean sections, 26 were associated with infection and an additional eight with fatal emboli. Hemorrhage caused the death of 13 and shock or sudden death an additional eight. Toxemias were treated by Cesarean section in eight fatal cases and diseases associated with pregnancy made up the additional five of the Cesarean section deaths. Of the 21 deaths attributed to emboli during the puerperium eight were associated with Cesarean section.

Considering indications for operation some reports show as high as one-seventh of the total number of sections are done because of a prior section. In the California series for 1940, prior section was the indication in five deaths. The duration of labor was frequently too great before operating, the trial of labor period long being past. There were a few instances of cardiac disorder being treated by a Cesarean section without proper preoperative preparation and perhaps without regard to the case of spontaneous delivery. The increased work of the circulatory system following an operation is greater than that of the spontaneous delivery. Apparently a number of Cesarean sections and other operative procedures failed because of technical reasons. The delay in transfusions was the major factor in the actual death in several cases in this group. When vaginal operative attempts have failed, a Cesarean is especially dangerous. If the indication is solely tubal resection, it seems advisable to allow a spontaneous labor followed by a laparotomy in a day or two. In all, the results from Cesarean section throughout the State are not unfavorable, although the indications are often very scant and the patient is thereby exposed to at least eight times the hazard of a spontaneous delivery. Since the American College of Surgeons will approve only hospitals where consultations are requisite, the number of nonindicated sections will diminish.

Child Considerations

Child birth associated with maternal mortality, on the other hand, reveals a hazard to the fetus, both prior to delivery and during the neonatal period. In this series 32 per cent of the children were born dead. The highest proportion occurred

in the toxemias where more than half were not alive at birth. Then came the hemorrhages which accounted for two-thirds as many stillbirths as living children.

TABLE III

LIVE BIRTHS BY CAUSE OF PUERPERAL DEATH

	Per cent
Infection	84
Hemorrhage	61
Toxemia	45
Associated diseases	68
All other	83
Total	68

Table III indicated the fatal hazard in maternal death. The least chance of being born alive occurs when the mother has a severe toxemia. Infection to the mother has least but yet a positive correlation with the probability of a live birth.

Consideration of the child following Cesarean section deaths shows there were 52 term children, four of whom were born dead. Also 13 prematures were delivered by section of which four were stillborn. Of the infants delivered by section, 20 per cent were thus premature, only half of which survived. As pointed out by Miller (1) the 44 per cent mortality observed in premature section deliveries is not so much attributable to the method of delivery as to the primary weight of the child. Many of the indications for delivering the child prematurely were due to maternal complications.

Prior Death Survey Studies

Obstetricians were the attendants in 14 per cent of the 396 deaths studied by Bell from seven Pacific Coast cities for 1933 and 1934. The resident staff in hospitals attended 10 per cent, the surgeons 4 per cent, and general practitioners 62 per cent of the deaths reviewed by him. Osteopathic physicians attended the remaining 10 per cent. The three California cities at that time reported an autopsy rate of 37 per cent. Significantly, operations were done in about the same proportion of cases in this earlier urban study as in the present State-wide review. Likewise, with the exception of an increased number of infections, the 1940 deaths do not vary greatly from Bell's study. His committee, in considering the control factor, suggested that about 68 per cent of the deaths were preventable. Although this point has not been evaluated for the 1940 California study, it seems probable from the case reviews that there has been no marked change in the number of avoidable deaths.

Yerushalmy (2) upon statistically reviewing over a quarter of a million New York State cases, shows the survival interval of mothers dying from hemorrhage to average 2.2 days while infections were 16.6 days from parturition to death. When the pregnancy terminated prematurely, the puerperal fatality increased seven times that of term. Moreover, if the woman had a multiple pregnancy she was three times as likely not to survive as if her pregnancy were single. Mothers are less likely to die with double ovum than single ovum twins. He further noted that women dying following term delivery survived an average of 11 days while when the child was stillborn maternal death was noted in five days as the average. One unexplained finding which has been repeatedly observed elsewhere was the double fetal death or stillbirth rate for illegitimate infants although the unwed mother fatality did not vary from the total rate.

From his observations hemorrhage deaths occur more frequently in multiparae than in initial pregnancies. However, in general the primipera is less likely to survive than a woman in her third or fourth pregnancy, but by the sixth pregnancy and later the hazard increases rapidly. Likewise, with the exception of the first baby the combined infant loss* increases with each pregnancy.

In accordance with Grier's (5) Evanston series, Yerushalmy (2) also reports premature births as 5 per cent of the total. Somewhat over half of them die according to numerous observers. These premature infants then show a combined infant loss 18 times that of term children. It is interesting to recall in this regard that both fetal and neonatal deaths are significantly more frequent in males than females. Accordingly it might appear that it would be a greater maternal risk to bear a male child, but Yerushalmy's careful study finds that there is no difference in the actual death rate.

(Continued in next issue)

MORBIDITY

Complete Reports for Following Diseases for Week Ending June 21, 1941

Chickenpox

714 cases: Alameda County 3, Alameda 4, Berkeley 21, Hayward 1, Oakland 85, Butte County 2, Gridley 1, Contra Costa County 1, Fresno County 10, Fresno 2, Kern County 13, Bakersfield 2, Los Angeles County 80, Alhambra 16, Burbank 7, Compton 2, El Monte 1, Glendale 2, Huntington Park 6, Inglewood 1, Long Beach 14, Los Angeles 86, Manhattan 1, Monrovia 1, Montebello 4, Pasadena 16, Pomona 10, Redondo 1, San Fernando 2, San Gabriel 1, Santa Monica 3, Torrance 1, Lynwood 2, South Gate 3, Gardena 1, Marin County 2, San Anselmo 3, Ukiah 12, Merced 1, Monterey County 2, Orange County 16, Anaheim 1, Fullerton 1, Orange 13, Santa Ana 2, La Habra 2, Perris 1, Riverside 1, Sacramento County 5, Sacramento 9, Ontario 1, San Diego County 6, Coronado 2, El Cajon 4, Escondido 1, National City 3, San Diego 76, San Francisco 70, San Joaquin County 9, Stockton 4, San Luis Obispo County 1, Burlingame 3, Daly City 2, Redwood City 1, San Bruno 18, San Mateo 2, Santa Barbara 2, Santa Clara County 3, Palo Alto 3, San Jose 9, Redding 11, Tulare County 1, Ventura County 2, Ventura 2.

* Viable fetal plus neonatal deaths, or expressed differently, stillborns weighing 1500 grams + infants dying under one month.

Diphtheria

15 cases: Oakland 1, Fresno 1, Los Angeles County 1, Los Angeles 2, Merced 1, Riverside County 1, Riverside 1, San Bernardino 1, El Cajon 1, San Diego 1, Stockton 1, Shasta County 2.

German Measles

525 cases: Alameda 6, Berkeley 1, Oakland 10, Gridley 1, El Dorado County 21, Fresno County 1, Kern County 12, Los Angeles County 60, Alhambra 3, Burbank 14, Claremont 1, Compton 3, Culver City 1, El Monte 4, Glendale 4, Long Beach 9, Los Angeles 35, Montebello 2, Pasadena 10, San Marino 2, Santa Monica 1, Whittier 4, South Gate 4, Signal Hill 1, Maywood 1, Madera County 1, Larkspur 2, Mill Valley 11, San Anselmo 15, Yosemite National Park 2, Ukiah 84, Monterey County 1, Carmel 1, Salinas 1, Napa 4, Orange County 7, Anaheim 3, Brea 4, Fullerton 2, Newport Beach 1, Orange 2, Santa Ana 8, La Habra 1, Riverside County 2, Riverside 1, Sacramento 2, San Bernardino County 1, San Diego County 7, Coronado 1, El Cajon 3, National City 4, Oceanside 1, San Diego 22, San Francisco 40, San Joaquin County 6, Stockton 2, San Luis Obispo County 9, Paso Robles 4, San Luis Obispo 1, San Mateo County 1, Burlingame 2, San Bruno 1, Belmont 1, Santa Barbara County 3, Santa Maria 1, Santa Clara County 2, Gilroy 7, Palo Alto 2, Santa Cruz County 4, Shasta County 1, Siskiyou County 2, Yreka 1, Modesto 1, Sutter County 1.

Influenza *

842 cases: Kern County 579, Bakersfield 234, Los Angeles County 5, El Monte 1, Long Beach 1, Los Angeles 5, Sacramento County 1, San Francisco 2.

Malaria

4 cases: Butte County 1, Kern County 1, Los Angeles County 1, Yolo County 1.

Measles

592 cases: Alameda 1, Berkeley 1, Oakland 3, Chico 1, El Cerrito 1, Kern County 6, Bakersfield 2, Delano 4, Tehachapi 1, Los Angeles County 190, Alhambra 1, Arcadia 1, Avalon 19, Burbank 2, Compton 1, Glendale 5, Glendora 1, Hermosa 1, Huntington Park 8, Long Beach 4, Los Angeles 42, Pasadena 2, Redondo 2, San Gabriel 3, Santa Monica 5, South Pasadena 2, Whittier 3, Lynwood 3, South Gate 16, Maywood 4, Bell 4, Mill Valley 1, Ukiah 97, Merced 2, Monterey County 16, Monterey 1, Soledad 4, Napa 7, Fullerton 2, Sacramento County 41, Sacramento 4, San Diego County 4, Coronado 1, San Diego 11, San Joaquin County 11, Stockton 3, San Luis Obispo County 3, Paso Robles 2, San Luis Obispo 1, San Carlos 1, Santa Maria 1, Santa Clara County 2, San Jose 1, Santa Cruz County 6, Shasta County 4, Redding 2, Yreka 4, Solano County 4, Modesto 1, Ventura County 5, Davis 1.

Mumps

944 cases: Alameda 10, Berkeley 4, Oakland 9, San Leandro 1, Butte County 1, Chico 1, Contra Costa County 1, Kern County 5, Bakersfield 1, Lassen County 1, Susanville 2, Los Angeles County 112, Alhambra 22, Burbank 10, Compton 4, Covina 1, Glendale 4, Glendora 12, Huntington Park 11, Long Beach 7, Los Angeles 78, Monrovia 2, Montebello 2, Pasadena 10, Pomona 2, San Gabriel 12, San Marino 1, Santa Monica 11, South Pasadena 1, Whittier 3, Lynwood 1, Hawthorne 1, South Gate 16, Monterey Park 1, Maywood 5, Bell 4, Madera County 5, Monterey 1, Orange County 11, Anaheim 4, Brea 1, Huntington Beach 4, Newport Beach 6, Santa Ana 12, La Habra 3, Tustin 1, Riverside County 8, Beaumont 1, Corona 8, Riverside 1, Sacramento County 35, Sacramento 6, North Sacramento 1, Ontario 1, San Diego County 24, Chula Vista 1, La Mesa 2, National City 7, Oceanside 4, San Diego 203, San Francisco 131, San Joaquin County 2, Stockton 1, Redwood City 1, San Bruno 2, Santa Barbara County 1, Lompoc 3, Santa Barbara 13, Santa Clara County 4, Los Gatos 1, San Jose 7, Santa Cruz County 1, Shasta County 6, Redding 1, Siskiyou County 1, Stanislaus County 2, Tulare County 1, Tulare 1, Ventura County 1, Oxnard 1, Ventura 1, Woodland 1, Yuba County 29.

Pneumonia (Lobar)

41 cases: Oakland 1, Imperial County 1, Los Angeles County 4, Glendale 1, Long Beach 1, Los Angeles 13, Gardena 1, Riverside County 1, Riverside 1, Sacramento 2, San Diego 3, San Francisco 1, San Luis Obispo 1, Visalia 1.

Scarlet Fever

112 cases: Berkeley 2, Oakland 2, Gridley 1, Contra Costa County 2, Fresno 2, Selma 1, Kern County 4, Bakersfield 2, Los Angeles County 6, Burbank 2, Los Angeles 31, Manhattan Beach 3, Monrovia 1, Pasadena 3, Pomona 2, Orange County 1, Newport Beach 1, Placer County 3, Riverside County 3, Sacramento County 1, Sacramento 2, San Bernardino County 3, Redlands 5, San Bernardino 1, San Diego 2, San Francisco 3, San Joaquin County 3, Stockton 5, San Luis Obispo 2, Santa Barbara 2, Santa Clara County 1, Solano County 1.

Smallpox

One case: South Pasadena.

* These cases of influenza represent delayed reports.

Typhoid Fever

5 cases: Butte County 1, Westmoreland 1, Los Angeles 1, Merced County 1, San Francisco 1.

Whooping Cough

686 cases: Alameda County 5, Alameda 1, Berkeley 20, Oakland 20, San Leandro 2, Contra Costa County 1, Antioch 7, El Dorado County 7, Fresno County 7, Fresno 6, Imperial County 1, Kern County 9, Bakersfield 3, Los Angeles County 115, Alhambra 3, Burbank 2, Compton 3, El Monte 1, Glendale 5, Huntington Park 2, Long Beach 14, Los Angeles 88, Monrovia 2, Montebello 1, Pasadena 11, Pomona 6, Redondo 2, San Fernando 1, San Marino 1, Santa Monica 4, South Pasadena 2, Torrance 1, South Gate 5, Monterey Park 1, Signal Hill 1, Maywood 3, Bell 1, Gardena 3, Soledad 1, Napa County 1, Orange County 7, Anaheim 3, Newport Beach 1, Santa Ana 10, Placentia 1, Riverside 4, Sacramento County 10, Sacramento 8, San Bernardino County 1, Colton 1, Redlands 4, San Bernardino 5, San Diego County 31, El Cajon 2, La Mesa 3, National City 21, San Diego 57, San Francisco 32, San Joaquin County 26, Lodi 4, Stockton 14, Burlingame 5, Daly City 2, Redwood City 1, San Bruno 10, San Mateo 3, South San Francisco 1, Santa Barbara County 3, Santa Barbara 3, Santa Maria 9, Santa Clara County 5, Shasta County 4, Redding 3, Solano County 1, Stanislaus County 10, Modesto 2, Tulare County 1, Ventura County 6, Santa Paula 3.

Meningitis (Epidemic)

2 cases: Oakland 1.

Dysentery (Amoebic)

6 cases: Los Angeles 2, Ontario 4.

Dysentery (Bacillary)

12 cases: Calipatria 1, Los Angeles County 1, Long Beach 1, Los Angeles 8, Merced County 1.

Ophthalmia Neonatorum

One case: Stockton.

Poliomyelitis

8 cases: Butte County 1, Selma 1, Los Angeles 1, Corona 1, San Francisco 1, Santa Barbara County 1, Santa Clara County 1, Corning 1.

Trachoma

6 cases: Fresno County 1, Los Angeles 1, San Francisco 4.

Paratyphoid Fever

2 cases: Los Angeles County 1, Maywood 1.

Food Poisoning

2 cases: San Luis Obispo County.

Undulant Fever

10 cases: Bakersfield 2, Los Angeles County 1, Compton 1, Los Angeles 1, Pasadena 1, Redlands 1, San Joaquin County 1, Siskiyou County 1.

Tularemia

3 cases: Riverside County 2, San Diego County 1.

Coccidioidal Granuloma

One case: Sacramento.

Epilepsy

27 cases: Berkeley 1, Glendale 1, Los Angeles 21, Orange County 1, San Francisco 2, San Mateo County 1.

Rabies (Animal)

11 cases: Sanger 1, Los Angeles County 3, Los Angeles 1, Santa Monica 1, San Diego 2, Tulare County 3.

Prayer is a force as real as terrestrial gravity. As a physician, I have seen men, after all other therapy had failed, lifted out of disease and melancholy by the serene effort of prayer.

—Dr. Alexis Carrel.

printed in CALIFORNIA STATE PRINTING OFFICE
SACRAMENTO, *1941* GEORGE H. MOORE, STATE PRINTER 98601 6-41 6750